This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-30. (Canceled)

31. (Previously Presented): A method for augmented reality guided positioning of an instrument tip within a target located in an object comprising the steps of:

presenting an augmented reality view by overlaying a virtual graphics guide onto a real view of the object and an instrument, the graphics guide comprising a virtual depth marker located outside of the object;

aligning the instrument to the graphics guide;

inserting the instrument to a depth determined in the augmented view by alignment of a predetermined feature of the instrument with the virtual depth marker, the feature being located along the length of the instrument at a certain distance from the instrument tip, and remains external to the object during insertion.

32. (Previously Presented): The method of claim 31 wherein the presenting step further includes interactive planning which comprises the steps of:

determining an optimal location for the instrument with respect to the target;

calculating the proximity of the predetermined portion of the instrument to the target based on the optimal location and the geometry of the instrument;

using the proximity calculation to determine the position of the virtual depth marker on the graphics guide.

2

33. (Previously Presented):   The method of claim 32 wherein the proximity calculation comprises a range a proximity measurements.

34. (Previously Presented):   The method of claim 32 wherein the proximity calculation corresponds to a final forward position of the predetermined portion of the instrument with respect to the target.

35. (Previously Presented):   The method of claim 32 wherein the proximity calculation corresponds to a distance between the virtual depth marker and a point within the target.

36. (Previously Presented):   Apparatus for augmented reality guided instrument positioning of an instrument tip within a target located in an object comprising:

a virtual graphics guide generator and positioner for generating and positioning a virtual graphics guide, the graphics guide comprising a virtual depth marker located outside of the object; and

a rendering device for rendering the virtual graphics guide onto a real view of the object and an instrument such that the instrument can be inserted to a depth determined in the augmented view by alignment of a predetermined feature of the instrument with the virtual depth marker, the feature being located along the length of the instrument at a certain distance from the instrument tip, and remains external to the object during insertion.

37. (Previously Presented):   The apparatus of claim 36, wherein said virtual graphics guide generator and positioner determines an optimal location for the instrument with respect to the target, and calculates the proximity of said predetermined portion of the instrument to the target based on the optimal location and the geometry of the instrument.

38. (Previously Presented): The apparatus of claim 37, wherein the proximity comprises a range of proximities and said virtual graphics guide generator and positioner determines an optimal range of locations for the predetermined portion of the instrument with respect to the target, and calculates the range of proximities of the predetermined portion of the instrument to the target based on the optimal range and the geometry of the instrument.

39. (Previously Presented): The apparatus of claim 37, wherein the proximity corresponds to a final forward position of the predetermined portion of the instrument with respect to the target.

40. (Previously Presented): The apparatus of claim 36, comprising further a display device to display the augmented view rendered by the rendering device to the user.